

REMARKS

Claims 19-22 are all the claims pending in the application. Reconsideration and allowance of all the claims are respectfully requested in view of the following remarks.

Specification

- The Examiner objected to the abstract of the disclosure as being too long and presented in two paragraphs. Applicants have deleted the abstract, and have presented a new one that is believed to overcome the Examiner's objections.
- The Examiner objected to the specification as including informalities. Specifically, the Examiner requested that the priority information be updated. Applicants have amended the specification so as to update the priority information and, thereby, overcome this objection.

Claim Rejections - 35 U.S.C. § 112

- The Examiner rejected claims 19-22 under §112, 2nd paragraph, as being indefinite. Specifically, the Examiner asserted that in claims 19 and 21 it is not clear how the cited process steps complete the manufacturing of the ink-jet recording head without steps of forming the nozzle plate with the nozzle orifice.

Applicants have amended claims 19 and 21 so as to include a step of joining a nozzle plate to the passage-forming substrate to thereby form an ink-jet recording head.

Claim Rejections - 35 U.S.C. § 102

- The Examiner rejected claim 19 under §102(b) as being anticipated by EP 963 846 to Shimada et al. (hereinafter Shimada). Applicants respectfully traverse this rejection because Shimada fails to disclose all of the elements as set forth in the claim.

Claim 19 sets forth that a passage-forming layer is etched to form a space portion of the passage-forming layer after there is imparted etching selectivity to the passage-forming layer in the area that is to be etched. For example, as shown in Figs 3a-5c, one embodiment provides etching selectivity to the passage-forming layer 40 by doping so that the passage forming layer

40 has a region 45 that is easily etched, and another region (wherein doping took place) that is not easily etched. Thus, by imparting etching selectivity to the passage-forming layer 40, the space portion 41 can be easily made with high accuracy. See the present specification at page 8, line 6 - page 9, line 12.

In contrast to that set forth in claim 19, Shimada fails to disclose that etching selectivity is imparted to a passage-forming layer. Instead, Shimada discloses a structure in which an elastic film removal part 350, where an elastic film is removed, is provided to the elastic film 50 in the area corresponding to a pressure generating chamber 12. However, there is no indication that there has been any etching selectivity imparted to the elastic film 50. See, for example, Figs. 9B-12. Further, Shimada fails to specifically describe the formation method of the elastic film removal part. Instead, there is only a generic description that it "... may be formed by etching, etc." See paragraph [0168]. That is, although Shimada's final product may facially resemble that of the present invention, the process of getting such a configuration is not described as being the same process. Specifically, Shimada's generic disclosure of "etching" fails to anticipate the specific recitation of etching a passage-forming layer to form a space portion of the passage-forming layer, after there is imparted etching selectivity to a region that will be a space portion of the passage-forming layer, as set forth in claim 19.

For at least any of the above reasons, Shimada fails to anticipate claim 19.

Claim Rejections - 35 U.S.C. § 103

- The Examiner rejected claims 20-22 under §103(a) as being unpatentable over Shimada. Applicants respectfully traverse this rejection because Shimada fails to teach or suggest all the elements as set forth in the claims.

Claims 20-22 set forth that etching selectivity is imparted by doping boron onto a predetermined region of a passage-forming layer which is formed of a polysilicon layer. As noted above in connection with claim 19, Shimada fails to teach or suggest etching a passage-forming layer to form a space portion of the passage-forming layer after there is imparted etching selectivity to a region that will be a space portion of the passage-forming layer. Accordingly,

Shimada fails to disclose imparting etching selectivity by doping boron, as set forth in claims 20-22.

The Examiner asserts that it would have been an obvious design choice to use polysilicon or boron-doped polysilicon as the passage-forming layer so as easily to generate pressure in order to eject ink. However, the Examiner provides no evidence, or cogent line of reasoning, as to why the choice of polysilicon or boron-doped polysilicon would provide such advantages, nor how they would be used to do so.

Yet, even when obviousness is based on a single prior art reference, there must be a showing of a suggestion or motivation to modify the teachings of that reference. *In re Kotzab*, 55 USPQ2d at 1316-1317 (citing *B.F. Goodrich Co. v. Aircraft Breaking Sys. Corp.*, 72 F.3d 1577, 1582, 37 USPQ2d 1314, 1318 (Fed. Cir. 1996)); see also MPEP § 2142 (quoting *Ex parte Clapp*, 227 USPQ 972, 973 (B. Pat. App. & Inter. 1985)) (“To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.”).

Although a reference need not expressly teach that the disclosure contained therein should be modified, the showing of why one of ordinary skill would have made such a modification, in whatever form, must nevertheless be “clear and particular. *Winner International Royalty Corporation v. Ching-Rong Wang*, 53 USPQ2d 1580, 1586-87 (Fed. Cir. 2000) (citations omitted).

Here, it is Applicants, not Shimada, who are concerned with the etching properties of the passage-forming layer. Further, as noted above, it is Applicants who have disclosed the advantages of high accuracy and ease in manufacture coming from etching the passage-forming layer after etching selectivity has been imparted thereto. Again, see page 8, line 6 - page 9, line 12. Thus, because Shimada is not at all concerned with the specifics of the general “etching” process, one of ordinary skill in the art—following the teachings of Shimada—would not have

found it obvious to use the specific etching processes, i.e., providing etching selectivity to the passage forming layer, as claimed.

For at least any of the above reasons, Shimada fails to render obvious Applicants' claims 20-22.

Double Patenting

- The Examiner rejected claims 19-21 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 59-60 of US Patent 6,502,930 (hereinafter US '930). Applicants respectfully traverse this rejection because, for at least the following reasons, claims 19-21 are patentably distinguishable from claims 59-60 of US '930.

The invention according to claims 59 and 60 of US '930 is to form a pressure generating chamber by etching a passage-forming substrate from a surface on which a vibration plate will be disposed. In contrast, the invention according to claims 19-21 is to form a pressure generating chamber and a space portion by etching a passage-forming substrate from a surface opposite to that on which the vibration plate will be disposed, i.e., from a surface opposite to a passage-forming layer, i.e., the side on which the nozzle plate will be disposed. Thus, the present invention of claims 19-21 is completely different from that in claims 59 and 60 of US '930.

For at least the above reasons, this rejection is believed to be in error and, thus, Applicants respectfully request that the Examiner withdraw it.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Amendment Under 37 C.F.R. § 1.111
US Appln No. 10/754,712

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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